Chapter 3

THE BAWBILT DATABASE

Gathering and sharing information related to BAWBILT organisms

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1. INTRODUCTION

Several tasks of the BAWBILT Cost Action (Task 1a: Directory of European scientists; Task 2: Synthesis of damage; Task 3: Control method; Task 4: Catalogue and synthesis of research papers and research activities) required the collection, treatment and display of data from participating countries. Although it was not identified as a separate task in the initial action outline, it became quickly obvious that the development of a common on-line database would greatly facilitate data exchange from and to participating countries. A separate working group was thus set-up in Florence meeting (July 1999) that worked in parallel as the other working groups throughout the duration of the BAWBILT action.

No specific resource had been planned for the development of the database. The main challenge was thus to find a good balance between simplicity such as to allow the developments to be carried out by our own limited resource, flexibility to do not restrict further potential uses of the database, and functions required by the separate tasks.

2. OBJECTIVES AND DESIGN

The general aims of the BAWBILT database were i) to allow country representatives or experts to enter and modify information regarding their countries, ii) to facilitate the synthesis of these data by task coordinators, and iii) to allow data

retrieval by the BAWBILT community and by the public. Three modules corresponding to separate tasks were developed (Table 1). Task 2 & 3 were grouped in a single module because damage and control are closely related and shared many common fields.

Table 1. *Characteristics of the three database modules. Tasks : 1a: Directory of experts, 2 & 3: Damage and control methods, 4: Literature. CR: Country representative. TC: Task Coordinator. Access to 2 & 3 module was internal up to the end of these tasks.*

Task	Data entry	Data validation	Access
1a	Anyone	CR / TC	Public
2 & 3	CR	—	Internal then public
4	Registered scientists	CR / TC	Registered scientists

The database was designed in MS Access 2000. On-line data entry, validation and retrieval procedure were written in MS Active Server Page (ASP) using the MS Internet Information Server 4 (IIS4) as web server. Several tables were shared by all modules: the list of species (See chapter 1) established in Krakow's meeting (April 2000), the list of host-plant species (appendix A), the list of participating countries (See chapter 1), and a subject thesaurus (appendix B).

2.1. Input data

The procedure for entering and modifying data is common to all modules. The user search firstly for records already present in the database. The user has then the possibility to add a new record to the list, or to update an existing record. The directory of experts (task 1a) records data per individual expert such as personal details (title, affiliation, address, phone, fax, e-mail, URL), area of interest (according to the subject thesaurus), BAWBILT species and host-plant species. The table on damage and control methods (tasks 2 & 3) records information grouped by country and by BAWBILT species: species relationship to the host; type of impact; type and extent of damage; damage estimates; type and extent of control strategies; and type of monitoring, risk rating or decision-support systems. The literature database records data per individual reference including classical bibliographic fields (authors, year, title source, etc.) in addition to several indexing fields (text language, summary language, geographic region, ecological region, BAWBILT species, host-tree, subject), additional description fields (BAWBILT abstract[1], BAWBILT abstract author, availability within the BAWBILT community, commentaries) and administrative fields (reference country and validation status).

2.2. Outputs

The procedure for retrieving data is also common to all modules. The user searches through the database according to criteria entered in search forms, receives a list of output records with limited amount of displayed details and has the possibility to

access the complete records by selecting any of the records displayed in the list. Queries on experts can be done by last name, country, BAWBILT species, host-tree, subject or by any combination of these fields. Queries on damage and control methods can be done by country, pest species, host-tree or by any combination of these fields. Queries of the literature database can be done at two levels: basic search with a limited number of search fields such as classical bibliographic fields, or advanced search offering the possibility to search though all fields used in the literature database.

3. DISCUSSION AND POTENTIAL IMPROVEMENTS

The database has efficiently played its role in facilitating information gathering regarding experts, damage & control methods, and literature for the present synthesis. However, at the present stage of development, it is not as such a satisfying information source in a longer term perspective. Several steps should be achieved in order to make it a valuable knowledge resource regarding BAWBILT organisms.

Firstly, a solution should be found to ensure that the database remains up to date. This would require a network of researcher willing to regularly check the data, contact country representatives to request updated information, and add, edit or delete relevant records.

Secondly, we received a lot of feedback from users who used the database during the BAWBILT action. Several forms and procedures for data entry and searches need to be modified according to these feedback.

Finally, the current type of outputs do not take yet fully advantage of the database structure and data. For example, searches are currently made separately within each module and cross-searches that would allow to display in a single page all experts, damage and control method records, and references related to a given species would be a valuable output. Another valuable output of the database would be to allow on-the-fly comparison of damage and control methods regarding one species between countries across Europe.

It is believed that the database will probably not survive the BAWBILT COST action if none of these steps is achieved. Conversely, given the critical mass of data brought together to date, and if a limited amount of resource is put together to achieve these steps, the BAWBILT database could become a highly valuable knowledge base regarding BAWBILT organisms and contribute in a long term perspective to better address threats caused by these pests to European forests.

The database can be accessed at: http://lubies.ulb.ac.be/bawbilt

4. NOTES

1   This field is designed to allow country representative to enter abstracts of reference from gray literature having no text nor abstract written in English.

5. ACKNOWLEDGEMENTS

APPENDIX A: HOST-PLANT SPECIES

Abies sp., *Abies alba*, *Abies cephalonica*, *Abies grandis*, *Abies lasiocarpa*, *Abies nobilis*, *Abies nordmanniana*, *Abies procera*, *Abies sibirica*, *Acer sp.*, *Acer campestre*, *Acer platanoides*, *Acer pseudoplatanus*, *Acer tataricum*, *Aesculus hippocastanum*, *Alnus sp.*, *Alnus cordata*, *Alnus glutinosa*, *Alnus incana*, *Betula sp.*, *Betula pendula*, *Betula pubescens*, *Carpinus betulus*, *Carya ovata*, *Castanea sativa*, *Celtis australis*, *Celtis tournefortii*, *Ceratonia siliqua*, *Cercis siliquastrum*, *Chamaecyparis lawsoniana*, *Chamaerops humilis*, *Corylus sp.*, *Corylus avellana*, *Corylus colurna*, *Cupressus sempervirens*, *Cydonia oblonga*, *Erica azorica*, *Eucalyptus sp.*, *Fagus sp.*, *Fagus orientalis*, *Fagus sylvatica*, *Frangula sp.*, *Fraxinus sp.*, *Fraxinus angustifolia*, *Fraxinus excelsior*, *Fraxinus ornus*, *Ilex perado*, *Juglans sp.*, *Juglans cinerea*, *Juglans nigra*, *Juglans regia*, *Juniperus sp.*, *Juniperus brevifolia*, *Juniperus excelsa*, *Juniperus oxycedrus*, *Larix sp.*, *Larix decidua*, *Larix gmelinii*, *Larix kaempferi*, *Larix leptolepis*, *Larix × eurolepis*, *Laurus azorica*, *Myrica faia*, *Olea sp*, *Ostrya sp*, *Picea sp.*, *Picea abies*, *Picea omorika*, *Picea sitchensis*, *Pinus sp.*, *Pinus halepensis*, *Pinus cembra*, *Pinus contorta*, *Pinus nigra* var *austriaca*, *Pinus nigra* var *corsicana*, *Pinus pinaster*, *Pinus pinea*, *Pinus strobus*, *Pinus sylvestris*, *Platanus × acerifolia*, *Populus sp.*, *Populus alba*, *Populus alba × canescens*, *Populus deltoïdes*, *Populus euramericana*, *Populus nigra*, *Populus tremula*, *Populus trichocarpa*, *Prunus sp.*, *Prunus avium*, *Prunus serotina*, *Pseudotsuga menziesii*, *Quercus sp.*, *Quercus frainetto*, *Quercus ilex*, *Quercus petraea*, *Quercus pubescens*, *Quercus robur*, *Quercus rubra*, *Quercus suber*, *Robinia pseudoacacia*, *Salix sp.*, *Salix alba*, *Salix caprea*, *Salix fragilis*, *Sequoia sempervirens*, *Sorbus sp.*, *Sorbus aria*, *Sorbus aucuparia*, *Sorbus austriaca*, *Sorbus domestica*, *Sorbus hybrida*, *Sorbus intermedia*, *Sorbus latifolia*, *Sorbus torminalis*, *Tamarix africana*, *Thuja plicata*, *Tilia sp.*, *Tilia cordata*, *Tilia platyphyllos*, *Tilia tomentosa*, *Tilia tomentosa*, *Tsuga heterophylla*, *Ulmus sp.*, *Ulmus campestris*, *Ulmus glabra*, *Ulmus montana*, *Ulmus procera*, *Vaccinium cylindraceum*.

APPENDIX B: SUBJECT THESAURUS

Insect related keywords: Systematic, Basic biology, Geographic distribution, Anatomy and physiology, Communications, Dispersal, Pathology, Population study, Insect performance, Entomological technique. Insect-tree relationship related keywords: Tree finding, Tree susceptibility. Forest management related keywords: Forest management, Insect damage, Risk assessment, Pest management, Legislation. Other keywords: Abiotic factor, Insect - fungus relationship, Natural enemy, Non target organism.